

DETAILED ACTION

1. This communication is in response to the after final amendment filed on 11/17/2009. After thorough search and examination of the present application and in light of the prior art made of record, claims 24-25, 27, 29, 31, 37-41 and 44-48 (renumbered as 1-15) are allowed.

Claims 1-23, 26, 28, 30, 32-36, 42-43 and 49 have been cancelled.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview/email with Attorney, David W. Victor Registration No. 39,867 on December 3, 2009. A copy of the email from the Attorney with proposed amendments is also being attached.

Please amend the claims, which were filed on 11/17/2009 with new versions as follows:

1-23. (Canceled)

24. (Previously Presented) The method of claim 37, wherein the plurality of storage entity objects include at least one of a disk array system, storage pool, volume, host system, Fibre Channel; Port, and disk.

25. (Previously Presented) The method of claim 24, wherein the top level storage entity comprises the disk array system, and wherein each object other than the disk array system is associated as a component of the disk array system object or a subcomponent of one of the components of the disk array system object.

26. (Canceled)

27. (Currently Amended) The method of claim 37, wherein the creating operation comprises creating a plurality of storage objects, and wherein the storage objects have associations to each other that are consistent with corresponding storage entities' relationships modeled in a Storage Management Initiative Specification (SMI-S/Bluefin) profile.

28. (Canceled)

29. (Currently Amended) The method of claim 37, wherein the inquiry is received from a Storage Resource Manager (SRM) CIM Client Application.

30. (Canceled)

31. (Previously Presented) The method of claim 37, wherein the inquiry includes the unique ID for a disk array, wherein the components and subcomponents for which information is obtained comprise storage pools and disks, and wherein the relationships indicate a relationship of storage pools to the disk array system and of the disks to the storage pools.

32-36. (Canceled)

37. (Currently Amended) A computer implemented method for responding to an inquiry, comprising the following operations:

receiving a first single inquiry from a Common Information Model (CIM) client application including a unique ID of a top level storage entity, wherein the top level storage entity identified by the unique ID includes components associated as a component of the top level storage entity and a subcomponent of at least one component;

using CIM client Application Programming Interfaces (APIs) in response to the first single inquiry to obtain information from a CIM Object Manager (CIMOM) using the unique ID of the top level storage entity to obtain information on components and subcomponents of the top level storage entity from multiple CIM objects on the top level

storage entity and components and subcomponents of the top level storage entity in the CIMOM;

creating a plurality of storage objects in a computer readable storage medium including information on the top level storage entity and components and subcomponents, and parent-child relationships among the top level storage entity and the components and subcomponents of the top level storage entity;

populating the created storage objects with information received from the CIMOM including identifying the entities in the top level storage entity and the parent child relationships of the top level storage entity, components and subcomponents, and wherein properties of each storage object map directly to properties of at least one CIM class used to represent the top level storage entity and components and subcomponents of the top level storage entity in the CIMOM; [[and]]

returning information on the storage objects to the CIM client application that sent the first single inquiry; and

receiving a second single inquiry including the unique ID of a component storage entity, wherein the receiving, obtaining, creating, populating, and sending operations are repeated to obtain information concerning the component storage entity and the component storage entity's relationships to other components.

38. (Currently Amended) A system in communication with a Common Information Model Object Manager (CIMOM) for responding to an inquiry from a host, comprising:

a processor; and

a computer readable storage medium having code executed by the processor to perform operations, the operations comprising:

receiving a first single inquiry from a Common Information Model (CIM) client application including a unique ID of a top level storage entity, wherein the top level storage entity identified by the unique ID includes components associated as a component of the top level storage entity and a subcomponent of at least one component;

using CIM client Application Programming Interfaces (APIs) in response to the first single inquiry to obtain information from a CIMOM using the unique ID of the top level storage entity to obtain information on components and subcomponents of the top level storage entity from multiple CIM objects on the top level storage entity and components and subcomponents of the top level storage entity in the CIMOM;

creating a plurality of storage objects in a computer readable storage medium including information on the top level storage entity and components and subcomponents, and parent-child relationships among the top level storage entity and the components and subcomponents of the top level storage entity;

populating the created storage objects with information received from the CIMOM including identifying the entities in the top level storage entity and the parent child relationships of the top level storage entity, components and subcomponents, and wherein properties of each storage object map directly to properties of at least one CIM

class used to represent the top level storage entity and components and subcomponents of the top level storage entity in the CIMOM; and

returning information on the storage objects to the CIM client application that sent the first single inquiry; and

receiving a second single inquiry including the unique ID of a component storage entity, wherein the receiving, obtaining, creating, populating, and sending operations are repeated to obtain information concerning the component storage entity and the component storage entity's relationships to other components.

39. (Previously Presented) The system of claim 38, wherein the plurality of storage entity objects include at least one of a disk array system, storage pool, volume, host system, Fibre Channel; Port, and disk.

40. (Previously Presented) The system of claim 39, wherein the a top level storage entity comprises the disk array system, and wherein each object other than the disk array system is associated as a component of the disk array system object or a subcomponent of one of the components of the disk array system object.

41. (Currently Amended) The system of claim 38, wherein the first single inquiry is received from a SRM CIM Client Application.

42. (Canceled)

43. (Canceled)

44. (Currently Amended) A computer readable storage medium include code executed to communicate with a Common Information Model Object Manager (CIMOM) to respond to an inquiry from a host and to perform operations, the operations comprising:

receiving a single inquiry from a Common Information Model (CIM) client application including a unique ID of a top level storage entity, wherein the top level storage entity identified by the unique ID includes components associated as a component of the top level storage entity and a subcomponent of at least one component;

using CIM client Application Programming Interfaces (APIs) in response to the single inquiry to obtain information from a CIMOM using the unique ID of the top level storage entity to obtain information on components and subcomponents of the top level storage entity from multiple CIM objects on the top level storage entity and components and subcomponents of the top level storage entity in the CIMOM;

creating a plurality of storage objects in a computer readable storage medium including information on the top level storage entity and components and subcomponents, and parent-child relationships among the top level storage entity and the components and subcomponents of the top level storage entity;

populating the created storage objects with information received from the CIMOM including identifying the entities in the top level storage entity and the parent child relationships of the top level storage entity, components and subcomponents, and wherein properties of each storage object map directly to properties of at least one CIM class used to represent the top level storage entity and components and subcomponents of the top level storage entity in the CIMOM; [[and]]

returning information on the storage objects to the CIM client application that sent the first single inquiry; and

receiving a second single inquiry including the unique ID of a component storage entity, wherein the receiving, obtaining, creating, populating, and sending operations are repeated to obtain information concerning the component storage entity and the component storage entity's relationships to other components.

45. (Previously Presented) The computer readable storage medium of claim 44, wherein the plurality of storage entity objects include at least one of a disk array system, storage pool, volume, host system, Fibre Channel; Port, and disk.

46. (Currently Amended) The computer readable storage medium of claim 45, wherein the [[a]] top level storage entity comprises the disk array system, and wherein each object other than the disk array system is associated as a component of the disk array system object or a subcomponent of one of the components of the disk array system object.

47. (Currently Amended) The computer readable storage medium of claim 44, wherein the first single inquiry is received from a Storage Resource Manager (SRM) CIM Client Application.

48. (Previously Presented) The computer readable storage medium of claim 44, wherein the first single inquiry includes the unique ID for a disk array, wherein the components and subcomponents for which information is obtained comprise storage pools and disks, and wherein the relationships indicate a relationship of storage pools to the disk array system and of the disks to the storage pools.

49. (Canceled)

Reason for Allowance

3. The prior art made of record does not teach or fairly suggest the combination of elements, as recited in independent claims 37, 38 and 44.
4. More specifically, the prior art of records does not specifically suggest the combination of "using CIM client Application Programming Interfaces (APIs) in response to the first single inquiry to obtain information from a CIMOM using the unique ID of the top level storage entity to obtain information on components and subcomponents of the top level storage entity from multiple CIM objects on the top level storage entity and components and subcomponents of the top level storage entity in the CIMOM; creating

a plurality of storage objects in a computer readable storage medium including information on the top level storage entity and components and subcomponents, and parent-child relationships among the top level storage entity and the components and subcomponents of the top level storage entity; populating the created storage objects with information received from the CIMOM including identifying the entities in the top level storage entity and the parent child relationships of the top level storage entity, components and subcomponents, and wherein properties of each storage object map directly to properties of at least one CIM class used to represent the top level storage entity and components and subcomponents of the top level storage entity in the CIMOM" in combination with all the other limitations in the independent claims 37, 38 and 44.

These features together with other limitations of the independent claim are novel and non-obvious over the prior art of record. The dependent claims 24-25, 27, 29, 31, 39-41 and 45-48 being definite, enabled by the specification, and further limiting to the independent claims, are also allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to USMAAN SAEED whose telephone number is (571)272-4046. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571)272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Usmaan Saeed/
Examiner, Art Unit 2166
December 4, 2009

Usmaan Saeed
Patent Examiner
Art Unit: 2166

/Hosain T Alam/
Supervisory Patent Examiner, Art Unit 2166